

CLAIMS

1. A flame retarded resin composition comprising at least one resin selected from the group consisting of polycarbonate, polyester and mixtures thereof, and a flame retarding effective amount of at least one nonhalogenated arylalkylsilyl flame retardant, the flame retarded resin composition being substantially free of haloorganic flame retardant and phosphate flame retardant.  
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2. The flame retarded resin composition of Claim 1 wherein the polycarbonate resin is an aromatic polycarbonate and the polyester resin is an aromatic polyester.
3. The flame retarded resin composition of Claim 1 further comprising at least one  
10 other molding grade thermoplastic resin.
4. The flame retarded resin composition of Claim 3 wherein the other molding grade thermoplastic resin is selected from the group consisting of polystyrene, acrylonitrile-butadiene-styrene, high impact polystyrene, polyamides, polyethylene, polypropylene, polysulfone, polyvinyl acetate, ethylene-vinyl acetate copolymers, poly(methyl methacrylate), polyethylene  
15 oxide, cellulose acetate, cellulose nitrate and mixtures thereof.
5. The flame retarded resin composition of Claim 2 further comprising at least one other molding grade thermoplastic resin.
6. The flame retarded resin composition of Claim 5 wherein the other molding grade thermoplastic resin is selected from the group consisting of polystyrene, acrylonitrile-butadiene-styrene, high impact polystyrene, polyamides, polyethylene, polypropylene, polysulfone,  
20 polyvinyl acetate, ethylene-vinyl acetate copolymers, poly(methyl methacrylate), polyethylene oxide, cellulose acetate, cellulose nitrate and mixtures thereof.

7. The flame retarded resin composition of Claim 1 wherein the polycarbonate resin is present at a level of from about 70 to about 100 weight %.

8. The flame retarded resin composition of Claim 1 wherein the polyester resin is present at a level of from about 70 to about 100 weight %.

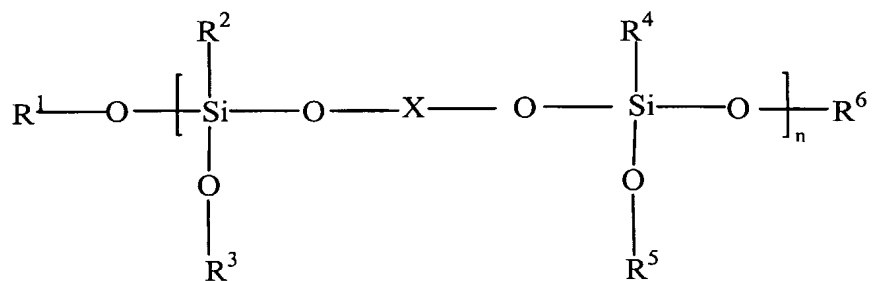
5 9. The flame retarded resin composition of Claim 1 wherein the polycarbonate resin is present at a level of from about 50 to about 100 weight %.

10. The flame retarded resin composition of Claim 1 wherein the polyester resin is present at a level of from about 50 to about 100 weight %.

10 11. The flame retarded resin composition of Claim 3 wherein the other thermoplastic resin is present at a level up to about 50 weight %.

12. The flame retarded resin composition of Claim 3 wherein the other thermoplastic resin is present at a level of up to about 30 weight %.

13. The flame retarded resin composition of Claim 1 wherein the arylalkylsilyl flame retardant is represented by the following formula:



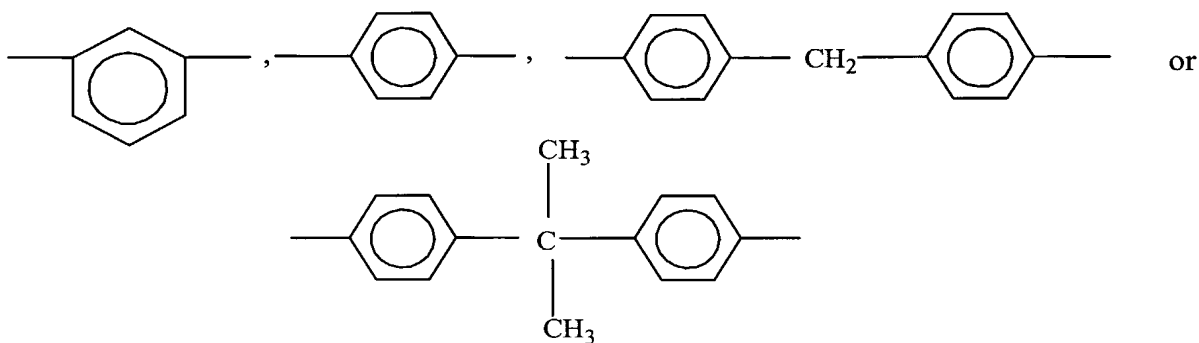
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wherein  $\text{R}^1$ ,  $\text{R}^3$ ,  $\text{R}^5$  and  $\text{R}^6$  each independently is aryl or substituted aryl;  $\text{R}^2$  and  $\text{R}^4$  each independently is a lower alkyl; X is a bridging group derived from a diol possessing an arylene moiety; and, n has a value of up to about 20.

14. The flame retarded composition of Claim 13 wherein  $R^1$ ,  $R^3$ ,  $R^5$  and  $R^6$  each independently is aryl or substituted aryl of from 6 to about 22 carbon atoms,  $R^2$  and  $R^4$  each independently is a lower alkyl of from 1 to about 4 carbon atoms, and  $n$  has a value of up to 5.

5 15. The flame retarded composition of Claim 13 wherein  $R^2$  and  $R^4$  each is a methyl group.

16. The flame retarded composition of Claim 13 wherein bridging group  $x$  is represented by one of the following structures:

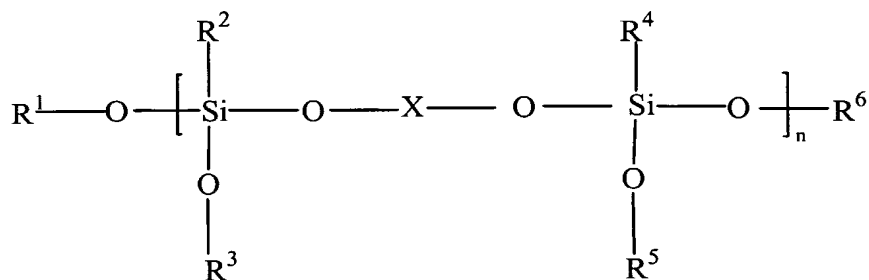


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17. The flame retarded composition of Claim 13 wherein  $n$  is 1 or 2.

18. The flame retarded composition of Claim 13 wherein the arylalkylsilyl flame retardant is present at a level of from 1 to about 30 weight %.

19. The flame retarded resin composition of Claim 2 wherein the arylalkylsilyl flame retardant is represented by the following formula:



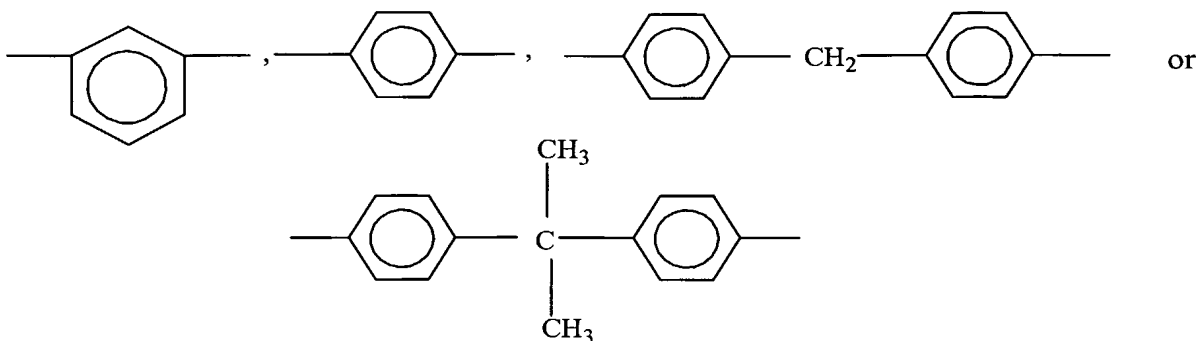
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wherein  $\text{R}^1$ ,  $\text{R}^3$ ,  $\text{R}^5$  and  $\text{R}^6$  each independently is aryl or substituted aryl;  $\text{R}^2$  and  $\text{R}^4$  each independently is a lower alkyl; X is a bridging group derived from a diol possessing an arylene moiety; and, n has a value of up to about 20.

20. The flame retarded composition of Claim 19 wherein  $\text{R}^1$ ,  $\text{R}^3$ ,  $\text{R}^5$  and  $\text{R}^6$  each  
10 independently is aryl or substituted aryl of from 6 to about 22 carbon atoms,  $\text{R}^2$  and  $\text{R}^4$  each independently is a lower alkyl of from 1 to about 4 carbon atoms, and n has a value of up to 5.

21. The flame retarded composition of Claim 19 wherein  $\text{R}^2$  and  $\text{R}^4$  each is a methyl  
group.

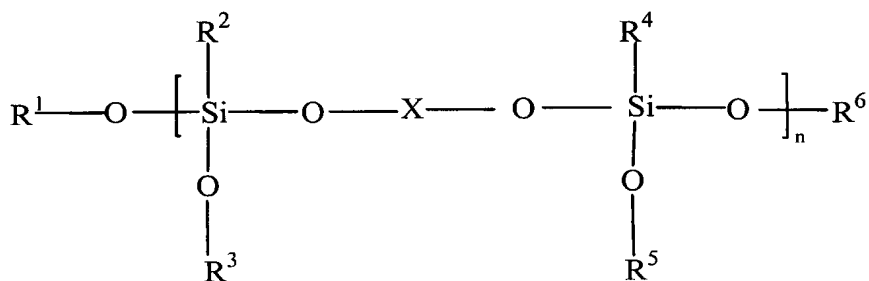
22. The flame retarded composition of Claim 19 wherein bridging group x is represented by one of the following structures:



5 23. The flame retarded composition of Claim 19 wherein n is 1 or 2.

24. The flame retarded composition of Claim 19 wherein the arylalkylsilyl flame retardant is present at a level of from 1 to about 30 weight %.

25. The flame retarded resin composition of Claim 3 wherein the arylalkylsilyl flame retardant is represented by the following formula:



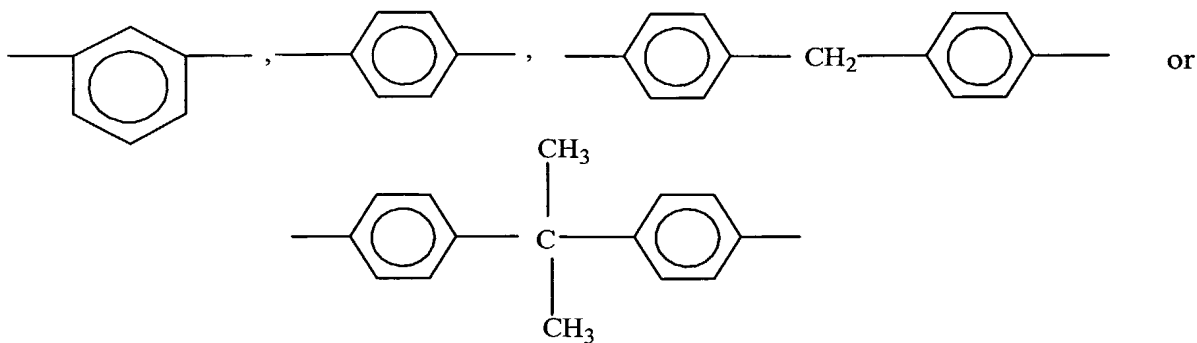
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wherein  $\text{R}^1$ ,  $\text{R}^3$ ,  $\text{R}^5$  and  $\text{R}^6$  each independently is aryl or substituted aryl;  $\text{R}^2$  and  $\text{R}^4$  each independently is a lower alkyl; X is a bridging group derived from a diol possessing an arylene moiety; and, n has a value of up to about 20.

26. The flame retarded composition of Claim 25 wherein  $R^1$ ,  $R^3$ ,  $R^5$  and  $R^6$  each independently is aryl or substituted aryl of from 6 to about 22 carbon atoms,  $R^2$  and  $R^4$  each independently is a lower alkyl of from 1 to about 4 carbon atoms, and n has a value of up to 5.

27. The flame retarded composition of Claim 25 wherein  $R^2$  and  $R^4$  each is a methyl group.

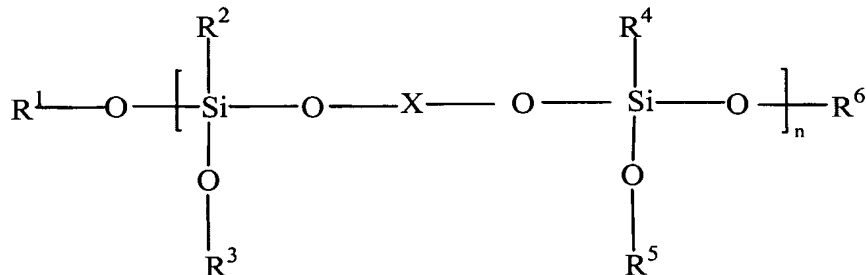
28. The flame retarded composition of Claim 25 wherein bridging group X is represented by one of the following structures:



29. The flame retarded composition of Claim 25 wherein n is 1 or 2.

30. The flame retarded composition of Claim 25 wherein the arylalkylsilyl flame retardant is present at a level of from 1 to about 30 weight %.

31. The flame retarded resin composition of Claim 5 wherein the arylalkylsilyl flame retardant is represented by the following formula:

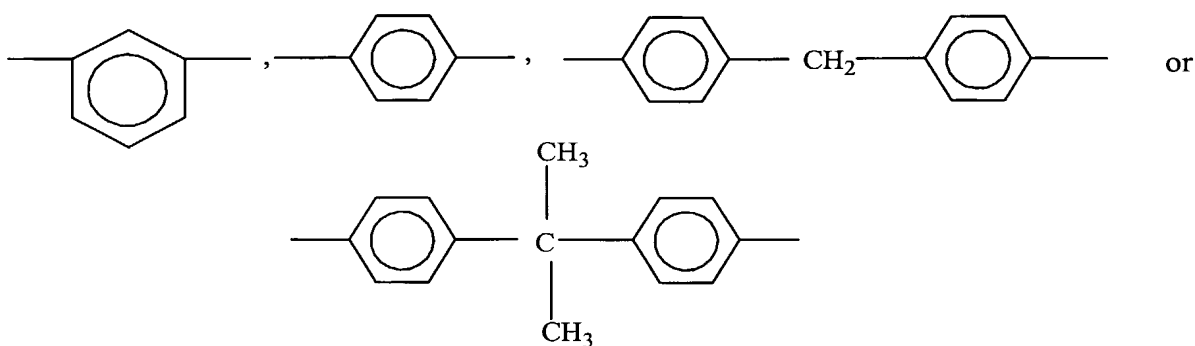


wherein  $R^1$ ,  $R^3$ ,  $R^5$  and  $R^6$  each independently is aryl or substituted aryl;  $R^2$  and  $R^4$  each independently is a lower alkyl; X is a bridging group derived from a diol possessing an arylene moiety; and, n has a value of up to about 20.

32. The flame retarded composition of Claim 31 wherein  $R^1$ ,  $R^3$ ,  $R^5$  and  $R^6$  each independently is aryl or substituted aryl of from 6 to about 22 carbon atoms,  $R^2$  and  $R^4$  each independently is a lower alkyl of from 1 to about 4 carbon atoms, and n has a value of up to 5.

33. The flame retarded composition of Claim 31 wherein  $R^2$  and  $R^4$  each is a methyl group.

34. The flame retarded composition of Claim 31 wherein bridging group x is represented by one of the following structures:



35. The flame retarded composition of Claim 31 wherein n is 1 or 2.

36. The flame retarded composition of Claim 5 wherein the arylalkylsilyl flame retardant is present at a level of from 1 to about 30 weight %.

37. A method for making arylalkylsilyl flame retardant of Claim 13 having a high weight ratio of dimer to oligomer which comprises reacting a molar excess of an alkyltrichlorosilane with a diphenol to obtain a diphenyl bis(dichloroalkylsilane), removing unreacted alkyltrichlorosilane by distillation, reacting the diphenyl bis(dichloroalkylsilane) from

which unreacted alkyltrichlorosilane has been removed with a molar excess of the same or different phenol to provide arylalkylsilyl flame retardant and removing unreacted phenol from the arylalkylsilyl flame retardant by distillation.